

The application of Fig proteases (ficin) as a digestive drug

N. Zhalehjo^{1,*}, A. Mostafaie²

¹*Clinical Biochemistry Department, School of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran*

²*Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran*

Background and Aims: Ficin (EC 3.4.22.3), is a family of cysteine proteases which is present in Fig (*Ficus Carica*) latex. It exhibits activity throughout a wide range of temperature and pH. It has more than 10 isozymes with similar molecular weight (25KD) and different isoelectric pH. This enzyme is used as medicine, also in medical procedures and manufacturing. We studied the proteolytic activity of ficin on some substrates to obtain a specific substrate profile of it for making digestive drugs.

Methods: Ficin from unripe fig was purified using extraction, precipitation by ammonium sulfate and ion-exchange chromatography on Carboxi Methyl Sepharose. Proteolytic activities of the purified enzyme in 4 bufferic conditions; acetate, citrate, phosphate & tris buffers at control & test samples were determined by digestion test of some proteins particularly major milk proteins. The results were run on 15% PAGE & the gel was stained by coomassie blue.

Results: Results of the proteolytic activity showed that ficin could digest casein completely in all bufferic conditions especially in phosphate buffer, but its activity on other proteins is partial.

Conclusions: This study showed that casein is a specific substrate of ficin. Because casein is the most abundant protein of milk, ficin can be a suitable candidate for making digestive drugs and casein-hydrolyzed milk production.

Keywords: Fig; Ficin; Cysteine protease